

**RECEIVED  
CENTRAL FAX CENTER**

Appl No.: 10/665,339

**JAN 29 2007**

Atty. Dkt. UCF-397CIP

**REMARKS/ARGUMENTS**

Favorable consideration of this application is respectfully requested. Applicant has amended claims 1, 3-6, 13 and 25 and cancelled claim 2. Applicant believes that the amendments place the claims in condition for allowance. Favorable reconsideration of this application is, consequently, earnestly solicited in view of the following remarks.

Applicant thanks Examiner Angebrannt for the telephone interview in December to discuss the advisory action conclusion that Applicant lost "continuity". After it was brought to the Examiner's attention that the original patent application was filed as a continuation-in-part of co-pending patent application serial number 09/750,708 filed December 28, 2000 now U.S. Patent No. 6,673,497, Examiner agreed that the subject application does in fact have continuity with the parent application.

Examiner also suggested that since Dr. Glebov is co-author of the cited publication and co-inventor of the subject matter of the application under consideration, that Dr. Glebov submit a Declaration under 37 CFR 1.132 to attest to the author's knowledge of PTR glass and the levels of impurities in the PTR glass described in the publication. Dr. Glebov's Declaration further explains that the first results with high absolute diffraction efficiency of PTR glass (Single-step exposure) and reported them at 18<sup>th</sup> Congress on Glass. It required several years to develop the idea of two-step exposure. The Declaration further explains that the co-author's of the cited publication did not know level of impurities in PTR glass at the time of the publication and had no idea of their role in the photo-thermo-refractive process. This is why there is no discussion of the level of impurities in PTR glass in the cited publication.

The Declaration of Dr. Glebov is submitted herewith. Please see paragraph 4 for a complete explanation of the knowledge of the co-author's of the cited publication at the time of the publication and how the publication differs from the claims in the subject application. Dr. Glebov is not available for signature, thus a signed Declaration will be submitted shortly with a Supplemental Amendment.

**35 U.S.C. 112 Rejections:**

In the Final Office Action dated August 31, 2006, claims 1-25 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Appl No.: 10/665,339

Atty. Dkt. UCF-397CIP

Examiner alleged that applicant does not have a basis for "approximately 100%", but does have a basis for "approximately 90%" on page 12 of the specification (claims 1, 15 and 23). Claims 1, 15 and 23 which recite "holograms having diffraction efficiency up to approximately 100%" have been amended to remove "approximately 100%". Claim 1 has been amended to add "a diffraction efficiency of at least approximately 90%" as described on page 12 line 7.

Examiner alleged that applicant does not have a basis for limiting containments, such as iron or heavy metals except for the specific composition described on page 12. Page 10 of the specification describes PTR glass fabrication which in step 1.1 recites that "components should not contain impurities of iron and heavy metals above a few parts per million. Page 12, second paragraph, describes the photosensitive glass composition and the rest of the sentence states that the glass had a total contamination with iron and heavy metals below 5 parts per million and glass melting technology providing no additional contaminants. Additionally, the subject application is a CIP of U.S. Patent No. 6,673,497 which is a CIP of U.S. Patent No. 6,586,141 which teaches that decreasing of concentrations of impurities of iron and heavy metals results in decreasing of refractive index in UV exposed areas after thermal development with minimum coloration. This effect enables a procedure of high efficiency hologram recording. For the reason provided, Applicant believes that the specification provides basis for limiting containments, such as iron or heavy metals and thus, requests removal of the section 112 rejection.

Claim 1-12 and 15-25 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. In regard to claims 1 and 23 Examiner questioned whether "restoring" should actually be --replaying--. Claims 1 and 23 have been amended to recite "replaying the hologram". Removal of the rejection is requested.

In regard to claim 15, Examiner suggested that claim 15 be amended to recite a UV source. Further in regard to claim 15, Examiner suggested deleting the phrase "and an increment of refractive index, respectfully" because modulation embraces any change in refractive index. Claim 15 has been amended to add the UV source and to delete --and an increment of refractive index, respectfully-- as suggested, thus, removal of the rejection is requested.

Appl No.: 10/665,339

Atty. Dkt. UCF-397CIP

In regard to claim 23, Examiner suggested replacing ionizing radiation with -UV- to make it compatible with the remainder of the claim. Claim 23 has been amended as suggested, thus removal of the rejection is requested.

35 U.S.C. 103(a) Rejections:

Claims 13 and 23-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Araujo et al. in view of Bukharev and Glebov et al. (1998). Examiner alleges that the combination of Araujo et al., Bukharev and Glebov et al discloses all of the limitations of claims 13 and 23-24.

Claims 1-13 and 23-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Araujo et al. in view of Bukharev and Glebov et al. (1998) and further in view of Gaissinsky. Examiner alleges that the combination of Araujo et al., Bukharev, Glebov et al. and Gaissinsky discloses all of the limitations of claims 1-13 and 23-24.

Claims 1-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Araujo et al. in view of Bukharev, Glebov et al. (1998) and Gaissinsky and further in view of IBM Tech. Disclosure. Examiner alleges that the combination of Araujo et al., Bukharev, Glebov et al., Gaissinsky and IBM Tech. Disclosure discloses all of the limitations of claims 1-25.

Applicant respectfully disagrees with Examiners allegations which form the basis for the section 103 rejections of claims 1-25. Applicant is familiar with the cited prior art references and submits a Declaration of Leonid Glebov under 37 CFR 1.132 describing the subject matter of the cited references, unexpected properties of the claimed invention and the technical differences between the subject matter claimed in claims 1-25 and the subject matter described in the cited references.

The declaration dated November 17, 2006 provides detailed technical facts to describe the features of the prior art reference to patentably distinguish the claimed invention over the prior art. Claims 1-25 include distinguishing features that are not taught in the prior art references.

Claim 1 has been amended to clarify that the hologram is produced by a difference between refractive indices in the unexposed area, UV exposed areas and the UV and visible light exposed areas as described on page 20, line 15 to page 21, line 4 and that visible light exposure of the UV exposed glass results in partial nonlinear transformation of nucleation centers as describe in the original specification on page 14 line 23, page 16 line 1 and page

Appl No.: 10/665,339

Atty. Dkt. UCF-397CIP

17 lines 15-16. No new matter has been added and the amended claims do not require an additional search because the previously presented claims 13 and 23 included the "nonlinear" limitation and thus the limitation was encompassed in the previous search. None of the cited references teach nonlinear transformation of nucleation centers. Claim 2 has been canceled and claims 3-6 have been amended to depend from claim 1 which distinguishes claims 1 and 3-12 from Araujo, Bukharev, Gaissinsky and Glebov (1998). Applicant believes that amendments independent claim 1 place the claim in condition for allowance and thus, that dependent claims 3-12 are allowable and requests removal of the rejection.

Claim 13 has been amended to clarify that exposing the UV exposed PTR glass with a high-power Visible light source for optical excitation of the color centers results in nonlinear partially bleaching the color centers to record a phase hologram by refractive index modulation as described on page 19, lines 14-15. Claim 13 was previously amended to add the distinguishing feature of nonlinear partial bleaching. Applicant believes that amended independent claim 13 is in condition for allowance and that dependent claim 14 is thus allowable and requests removal of the rejection.

Claim 15 has been amended to clarify that the hologram is generated by refractive index modulation which is described on page 19, lines 14-15 and which is a distinguishing feature between the subject matter of the subject invention and the prior art references cited by the examiner. Claim 15 was previously amended to clarify that that exposure to visible light centers results in nonlinear partially bleaching as described on page 17 lines 15-16, page 18 lines 6-7 and page 20 line 23 which distinguishes claims 15-22 from Araujo, Bukharev, Gaissinsky and Glebov (1998). Applicant believes that the amendment to claim 15 places the claim in condition for allowance and that claims 15-22 which depend from claim 15 are thus allowable. Removal of the rejection is respectfully requested.

Claim 23 has been further amended to clarify the difference in refractive index in the untreated area, the UV exposed area and the double exposed area as described on page 20, line 15 through page 21, line 4. The difference between refractive indices in the UV exposed and double exposed area is enough for hologram recording by visible light, which distinguishes claims 23-25 from Araujo, Bukharev Gaissinsky and Glebov (1998). Applicant believes that amended independent claim 23 and dependent claims 24-25 are allowable and requests removal of the rejection.

Appl No.: 10/665,339

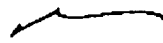
Atty. Dkt. UCF-397CIP

Claims 1-25 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of co-pending Application No. 11/261,077 (Atty. Dkt. No. UCF-489CIP) and over claims 1-23 of co-pending Application No. 10/834,431 (Atty. Dkt. No. UCF-424CIP). Provisional terminal disclaimers are submitted herewith. Thus, removal of the provisional double-patenting rejections is requested.

Applicant believes that claims 1 and 2-25, as amended are allowable. If Examiner disagrees that the claims are in condition for allowance, Applicant respectfully requests an interview with Examiner Angebrandt to discuss the differences between the prior art references and the claims of the subject application.

In view of the foregoing considerations, it is respectfully urged that claims 1 and 3-25 be allowed. Such action is respectfully requested. If the Examiner believes that an interview would be helpful, the Examiner is requested to contact the attorney at the below listed number.

Respectfully Submitted;

  
\_\_\_\_\_  
Brian S. Steinberger  
Registration No. 36,423  
101 Brevard Avenue  
Cocoa, Florida 32922  
Telephone: (321) 633-5080Date 1/29/07